

TOTOKU

LV52P3/LV32P3

High Resolution Graphics Card

User's Manual

TOTOKU ELECTRIC CO., LTD.

FCC Notice

Federal Communications Commission

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio or television communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the radio or television receiving antenna.
- Move the computer or equipment away from the receiver.
- Plug the computer or equipment into an outlet on a circuit different from that which the radio or television receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

CE Statement

This is Class A product. In a domestic environment this product may cause radio interface in which case the user may be required to take adequate measures.

About This Manual

- Read through this manual before you install or use this product.
- This manual provides detailed information on how to install and configure this product. As for information regarding your computer display or other peripheral devices that are not TOTOKU's products, please refer to the respective user's manuals or consult their respective dealers.
- Keep this manual in a safe and easily accessible place. In case of loss, contact your dealer for another copy of this manual.
- Attach this manual to the card when transferring to a third person.
- This manual is subject to change without notice.

Contents

1. Overview	4
2. Installation	5
2.1 Setting up DIP Switches	6
2.2 Installing LV52P3 / LV32P3	7
2.3 Connecting to the Display	8
3. Installing Driver Software	9
4. Setting up the Display	17
4.1 Display Properties	17
4.2 Advanced Settings	
4.2.1 Color / Palette	22
4.2.2 Screen Update	22
4.3 Multi Monitor Setting	23
4.4 Adaptor and Driver Information	31
4.5 Reconfiguring, Updating, and Uninstalling	32
5. Uninstalling Driver Software	34
6. Technical Specifications	
6.1 LV32P3	36
6.2 LV52P3	38
6.3 Display Interface	40
7. Disposing of the Product	40

1. Overview

Thank you for purchasing graphics card LV52P3 or LV32P3. TOTOKU's high-resolution PCI bus graphics cards are designed to deliver the highest quality visual images on 2, 3, and 5-megapixel LCD displays to meet market demands.

The following table shows the products names and their supporting displays.

Product Name	Supported Displays
LV32P3	3 megapixel monochrome and color LCD displays: • CCL316 • ME315L • ME315L plus
LV52P3	5 megapixel monochrome and color LCD Displays

For more information regarding LCD displays and/or related matters, please contact your dealer.

This package contains the following items. Contact your dealer if any item is missing.

- Graphics Card LV52P3 or LV32P3
- Driver & Installer CD-ROM
- User's Manual

Note: Save the original box and packing manual to pack the product for shipping. Damages occurred during shipping are not covered under the warranty.

2. Installation

This chapter explains how to install LV52P3 or LV32P3. Refer to the computer instruction manual as necessary.

Make sure to follow the procedures as indicated below to successfully install the graphics card and its software.

- 1) Set up the DIP switches
- 2) Install the card
- 3) Connect the display(s)
- 4) Turn on the computer
- 5) Install driver software
- 6) Set up the display properties
- 7) Restart the computer

Before installing ...

- If you do not know how to install, ask your dealer to install it.
- Do not touch connectors, IC/LSI pins, and/or terminals on the card. Static electricity could damage them.
- Handle the card with clean hands. Grease on your hands could cause the product to slip off.
- Keep any parts that become unnecessary for future use.
- Make sure that connectors, connector pins, and contacts are not damaged, deformed, or stained. Dust off before use. They could cause short circuits and fire.
- Handle the connectors carefully to prevent damage from dropping and keep them clean.
- Be careful not to drop any fasteners inside the computer. It could cause a short circuit and/or an open circuit.
- Do not expose the cables to heat; do not put heavy objects on the cables. They could damage the cables and cause fire. To disconnect a cable, undo the screws on the connector and pull straight by holding the connector.
- Use this product only on supported UL-listed computers.

2.1. Setting up DIP Switches

The DIP switches control output formats. The switches are set for EDID compatible displays by default. Consult your dealer to find out whether or not your display is EDID compatible.

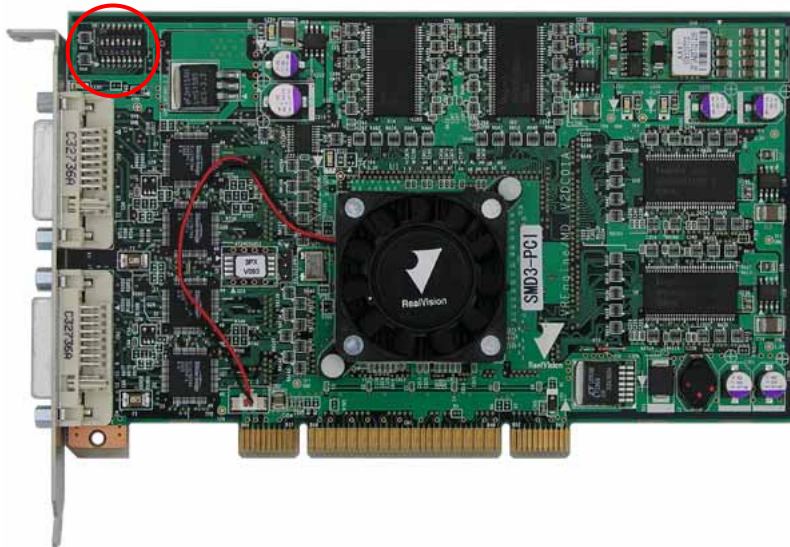


Figure 2.1 LV52P3/LV32P3

■ Disabling VGA Output

To disable VGA output through the card, turn switch 3 to zero. Set up all LV52P3's or LV32P3's the same way.



Figure 2.2 VGA Output Disabled

■ Enabling VGA Output on EDID compatible displays

To enable VGA Output on an EDID compatible display, turn switches 1 and 3 to zero as shown in Figure. 3.3, and the card detects display information through EDID and selects method of displaying VGA output automatically.

Note: Some EDID compatible displays do not support this setting. Contact your dealer and find out about this in advance.



Figure 2.3 VGA Output Disabled on EDID Compatible Displays

2.2. Installing LV52P3/LV32P3

Follow the instructions below on how to install the card.

1. Make sure to turn off your computer and peripheral devices.

Note: Careful, the internal parts of the computer may be very hot. Wait until they cool off before starting installation.

2. Remove the computer cover (see the computer instruction manual if necessary).
3. Insert the card in a PCI slot.
 - 1) If the subject PCI slot has a dust cap, remove it.
 - 2) Undo the screws of the bracket for the PCI slot. Keep the screws for later use to secure the graphics card to the slot.
 - 3) Insert this card to the PCI slot slowly and carefully.
 - 4) Insert the card firmly and secure it to the slot using the screws removed at step 2. Make sure that the card is now installed properly.

Note:

- If the card is not inserted properly, remove it once and insert it again. Do not force to insert or remove the card, or it could damage the cables, connectors, or the card itself.
- LV52P3/LV32P3 support the following slots: 33MHz-PCI, 66MHz-PCI bus and PCI-X bus. However, we recommend the 66MHz-PCI bus slot for the best performance.

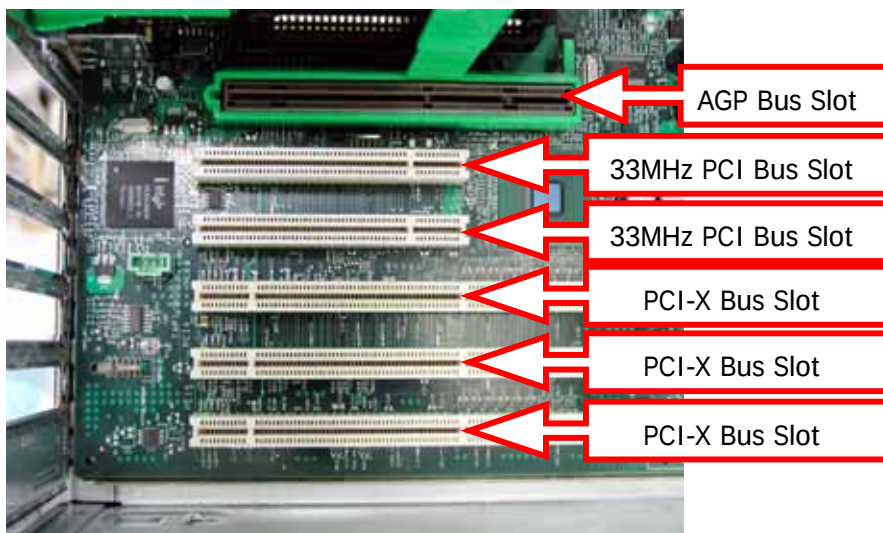


Figure 2.4 PCI Bus Slots

In Figure 2.4, two 33MHz-PCI-bus slots and three PCI-X-bus slots are available. Depending on the computer, the number of available slots, their order, and their types may vary. Use any slot when using only one LV52P3 or LV32P3.

2.3. Connecting to the Display

Follow the instructions below on how to connect the LCD display(s) to the card. Refer to the display instruction manual if necessary.

■ One Display on One Card

When connecting only one display, use DVI Connector 1 that is closer to the PCI bus. DVI Connector 2 is for the secondary display.

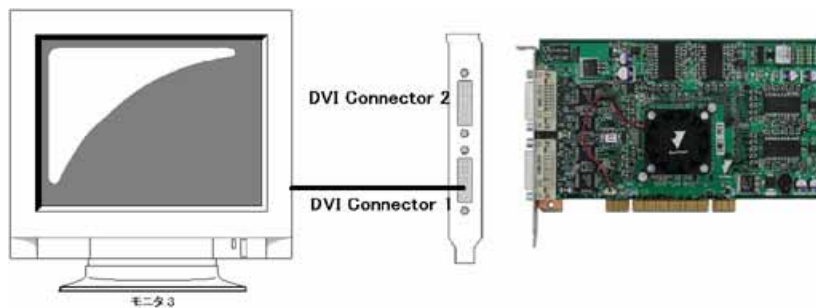


Figure 2.5 One Display Connected to One Card

■ Two Displays on One Card

When connecting two displays, use DVI Connector 1 for the primary display (Display 1) and DVI Connector 2 for the secondary display (Display 2). When displays are connected to the wrong connectors, the image will not be displayed properly.

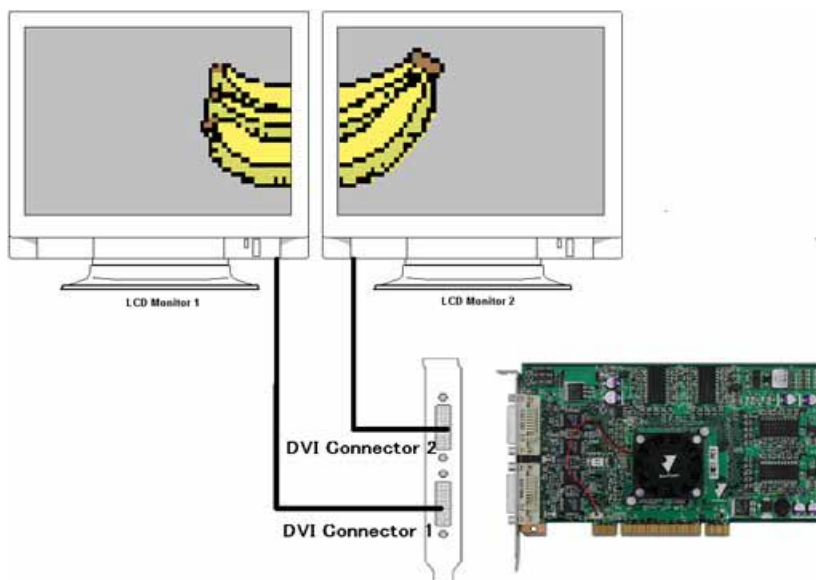


Figure 2.6 Two displays connected to one card

3. Installing Driver Software

This chapter explains how to install driver software for LV52P3/LV32P3. Follow the instructions below.

1. Turn on the computer and log into Windows as a user with administrative privileges.
2. Click “Cancel” when the Found New Hardware Wizard starts up.

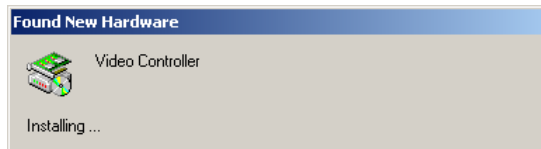


Figure 3.1 Found New Hardware

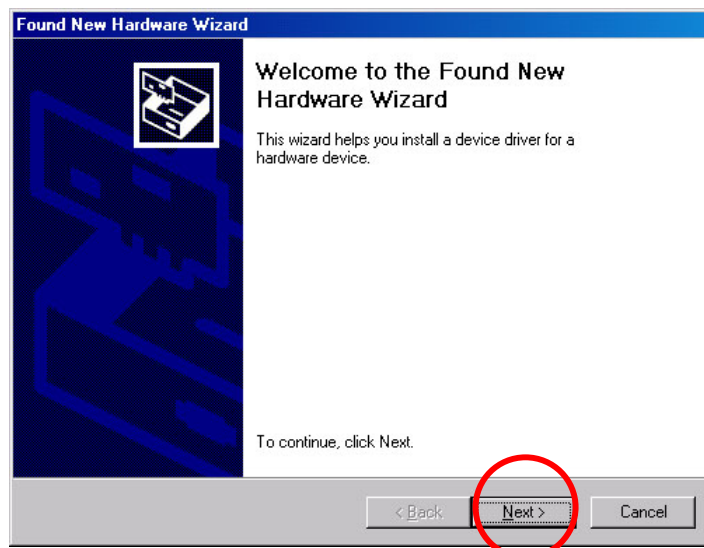


Figure 3.2 Welcome to the Found New Hardware Wizard

3. Insert the software driver CD-ROM in the CD-ROM drive, and the InstallShield Wizard starts up automatically.

Note: If the wizard does not start automatically, run **Setup.exe** from the CD-ROM.

4. Click “Next” on the wizard.

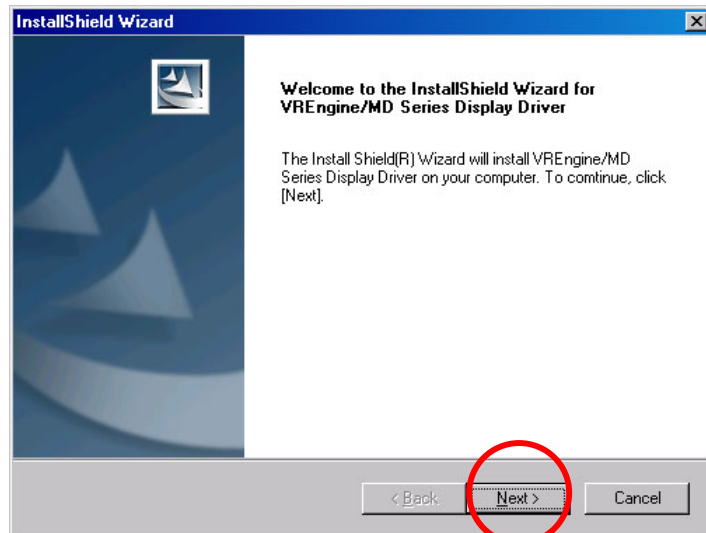


Figure 3.3 InstallShield Wizard

5. The License Agreement appears. Read the terms and conditions of the Agreement. If you accept the Agreement, click “Yes.” If you do not accept the Agreement, click “No,” and the wizard will terminate.

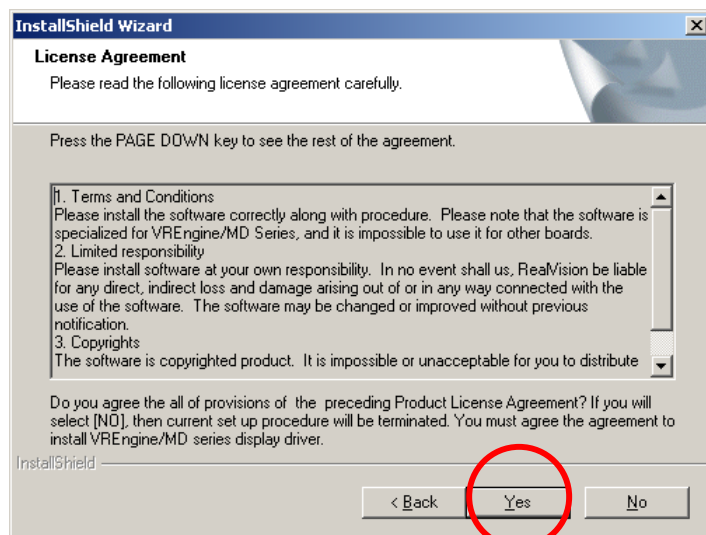


Figure 3.4 License Agreement

6. One of the following messages appears. Confirm the number of graphics cards installed and click “OK.”



Figure 3.5 When a single card installed



Figure 3.6 When two cards installed

7. When the following screen appears, confirm the graphics card name and select the number of displays connected to the card. Click “Next.”

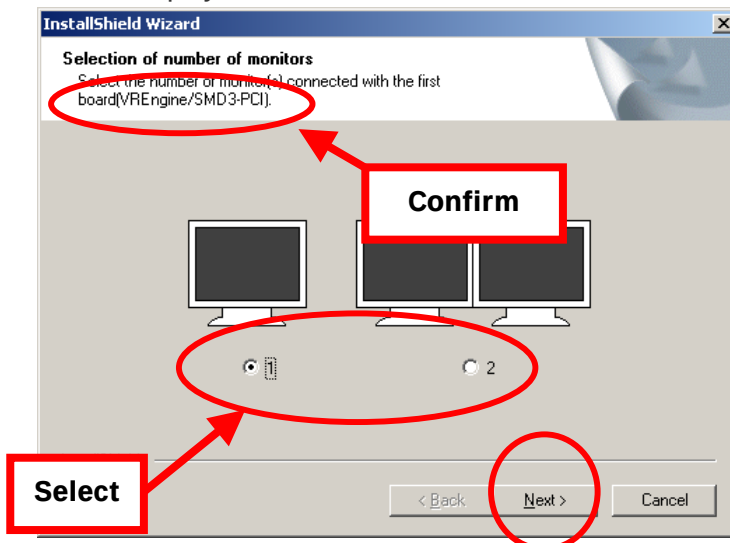


Figure 3.7 Monitor Number Selection

8. When the following screen appears, select a display model and click “Next.”

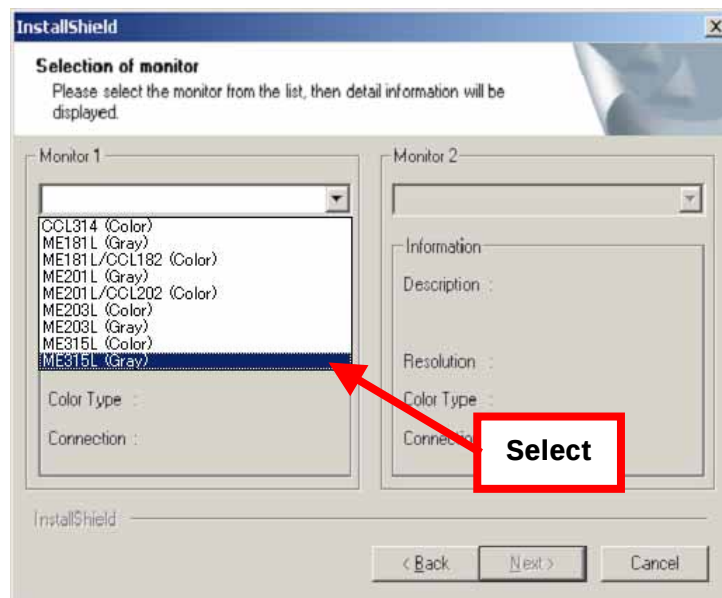


Figure 3.8 Monitor Selection - 1

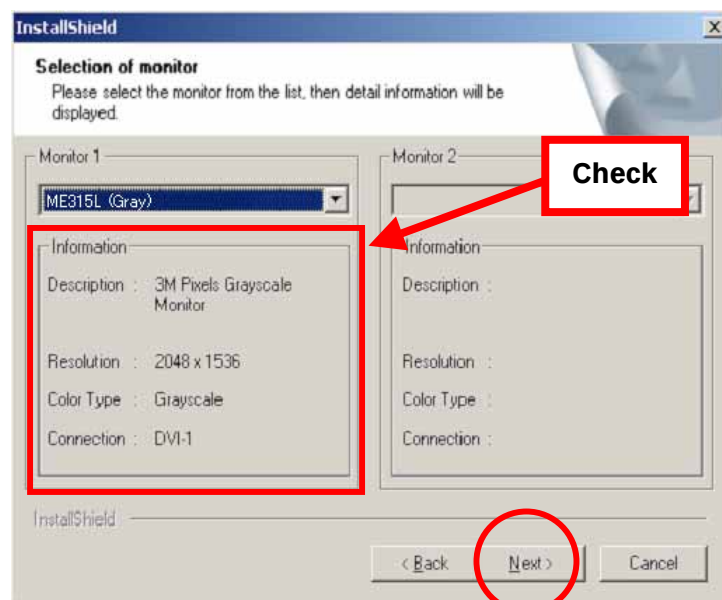


Figure 3.9 Monitor Selection - 2

Note: When two displays are connected, select them separately.

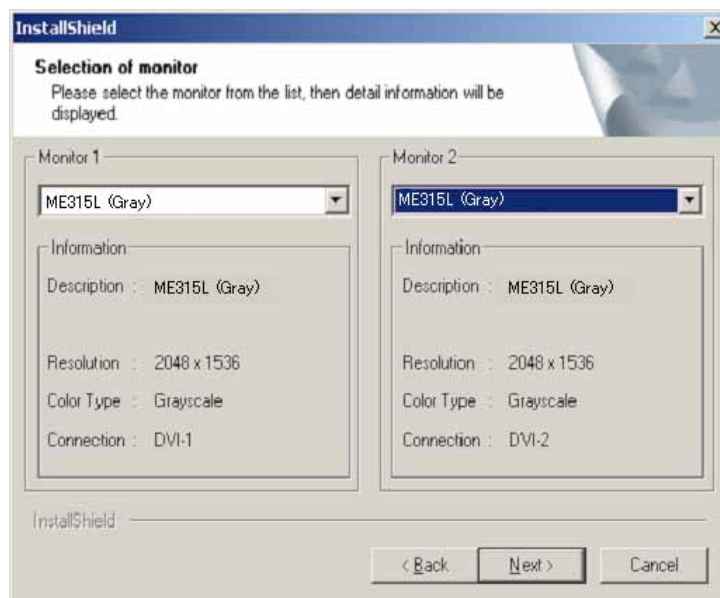


Figure 3.10 Monitor Selection - 3

9. When the following screen appears, confirm the contents and click “Next.”

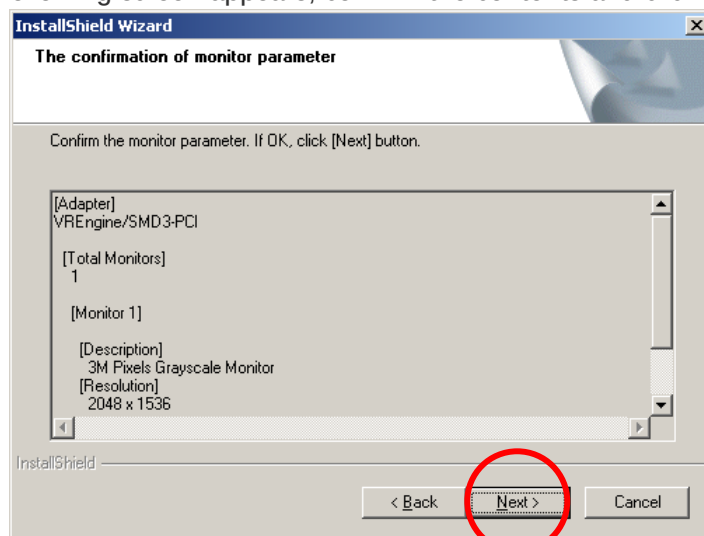


Figure 3.11 Display Parameter Confirmation

Note: When installing multiple cards, repeat steps 7 through 9 for each card.

10. The following screen appears. The **Current Settings** field shows configuration settings. Confirm the settings and click “Next,” and driver installation begins.

Note: To go back and change any settings, click “Back.”

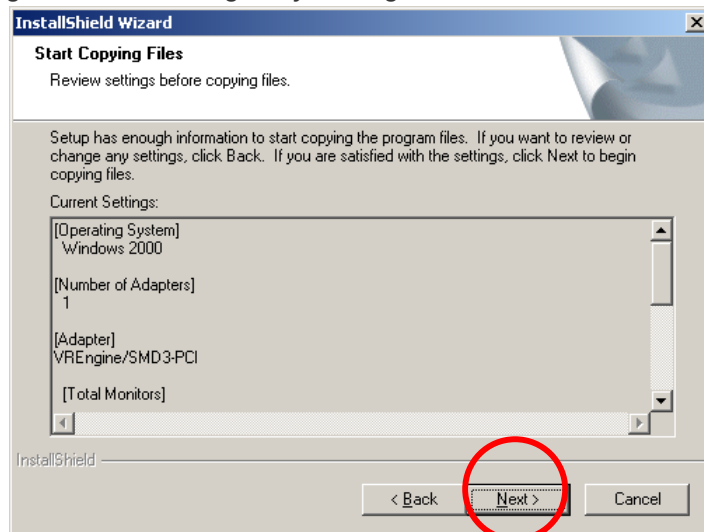


Figure 3.12 Start Copying Files

11. When the following screen appears, click “Yes.” If you are using Windows 2000, this screen appears for each display connected. If you are using Windows XP, this screen appears for each card installed, regardless of the number of displays.

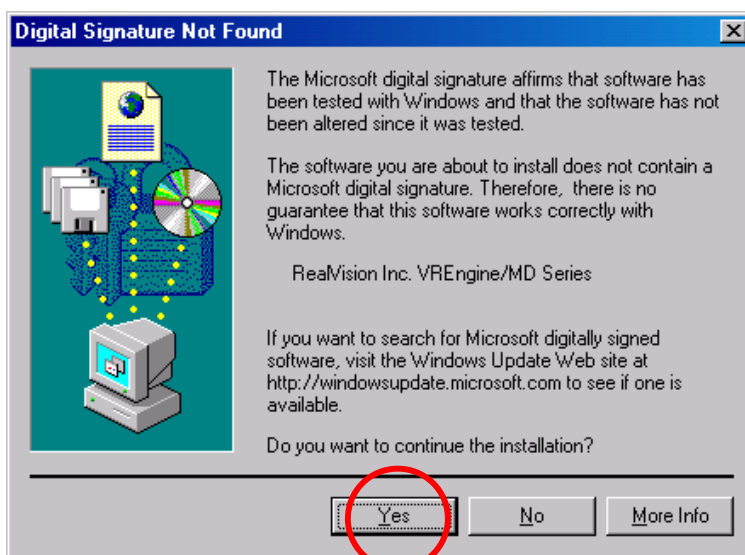


Figure 3.13 Digital Signature -1

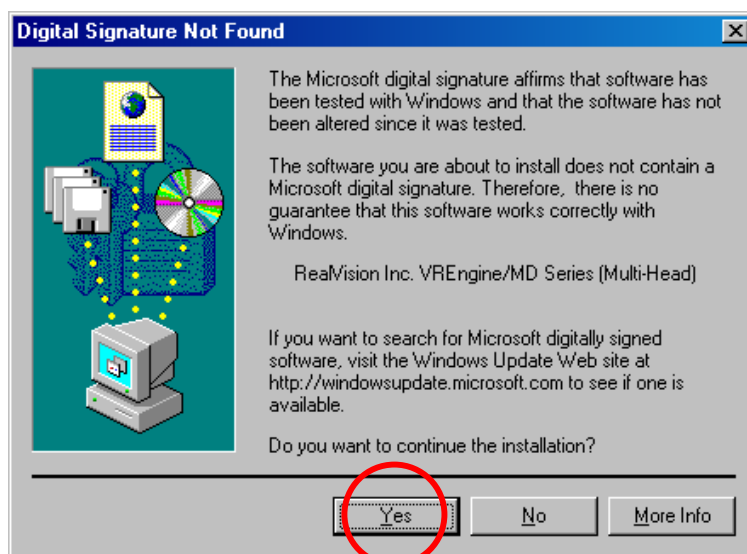


Figure 3.14 Digital Signature -2

12. When multiple displays are connected, the following message appears. To use displays independently, click "No." To use them in stretched mode, click "Yes." Otherwise, click "No."

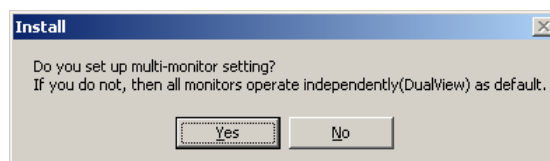


Figure 3.15 Multi-Monitor Settings

13. When the following wizard appears, select “Yes, I want to restart my computer now” and click “Finish.” The computer restarts itself.

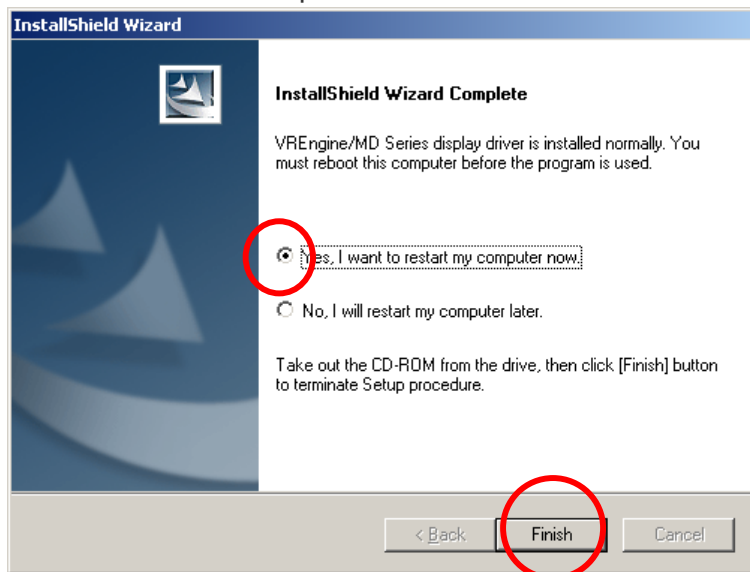


Figure 3.16 InstallShield wizard Complete

Note: When adding a card or changing a PCI bus slot, uninstall the driver once (see “**Uninstalling Driver Software**”) and install it again.

When multiple cards are installed, the motherboard BIOS may cause boot failure. In that case, try different slots. The cards will be detected in different order. If the problem remains, consult your dealer.

4. Setting up the Display

This chapter explains how to set up the display(s). When multiple displays are connected, set up each display separately.

4.1. Display Properties

1. Select **Control Panel>Display Properties** from the **Start** menu, and the Display Properties dialog box appears.

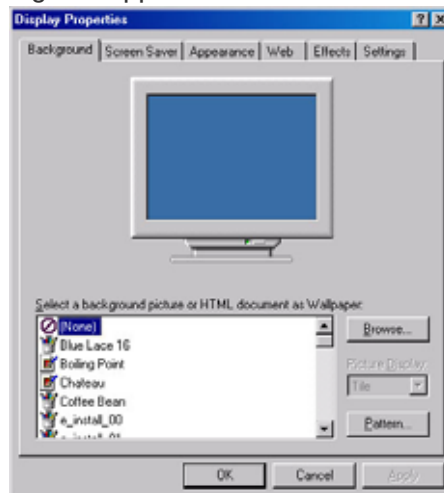


Figure 4.1 Display Properties

2. Select the **Settings** tab.

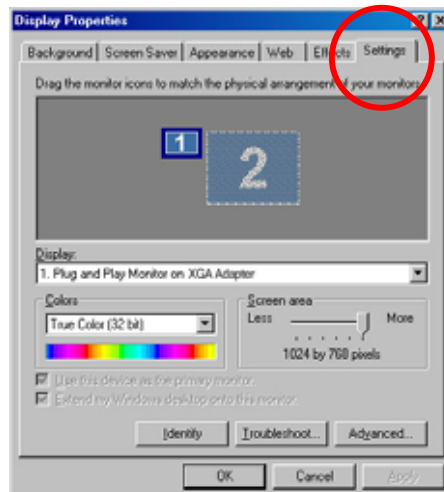


Figure 4.2 Setting tab

Note:

- The figure above is an example of the following configuration:
1st Display: Connected to the XGA Adapter on the motherboard or either on the AGP bus or on the PCI bus

2nd Display: Connected to LV52P3/LV32P3. Since it is not configured yet, the display shows nothing.

- When the computer has LV52P3/LV32P3 installed but without a display adapter, the 2nd display cannot exist. The 1st display will be the only display connected to LV52P3/LV32P3.

- Select the icon for the 2nd display.

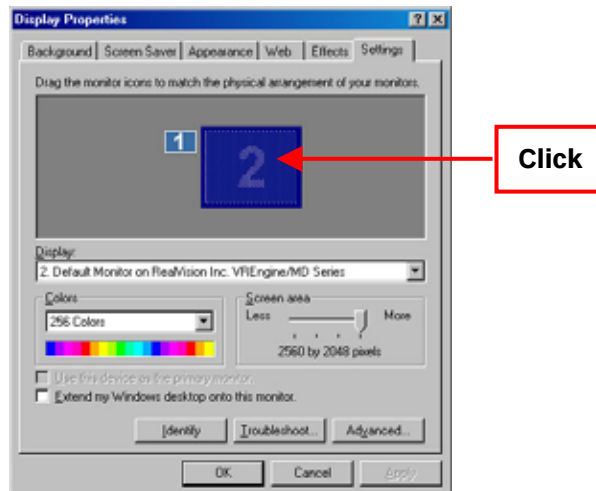


Figure 4.3 Select Desktop

- Select resolution using the slider in the **Screen area** section.
- Select a pixel format in the **Colors** section.
(If you are using Windows XP, see the explanation below on “Advanced.”)
- Check “Extend my Windows desktop onto this monitor.”
- Click “Apply,” and the 2nd display comes on.

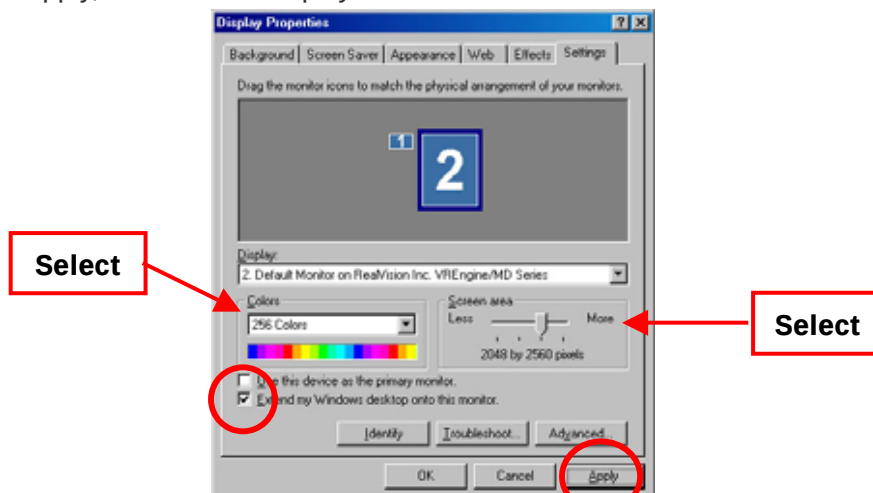


Figure 4.4 Desktop Configuration

For more information on the **Settings** tab settings, see the following explanations.

◆ Colors

Color modes for monochrome displays

- “True Color (32bit)”: 24 bit Color Conversion Grayscale palette
- “256 Colors”: 8 bit color palette

Color modes for color displays:

“256 colors,” “High Color (16bit),” and “True Color (32bit).”

For more Information, see 5.2.1.

◆ Screen Area

- 2560 x 2048: for 5 megapixel displays in landscape orientation
- 2048 x 2560: for 5 megapixel displays in portrait orientation

When 2- or 3 megapixel displays are connected, appropriate options appear.

◆ **Advanced:** A dialog box for the **Color/Palette** and **Screen Update** settings appears.

Note: Windows XP does not support 256 colors. If you are using Windows XP on a monochrome display, follow the instructions below.

- 1) Click “Advanced” on the **Settings** tab in the Display Properties dialog box, and the following screen appears.

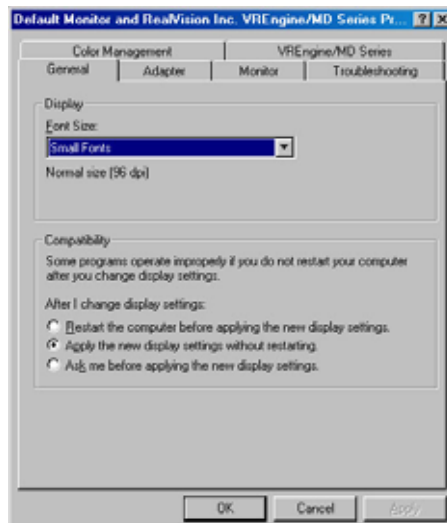


Figure 4.5 Advanced Setting – 1

- 2) Select the **Adapter** tab and click “List All Modes,” and the list of available color modes appears.

- 3) Select resolution and click "OK."
- 4) Select the **VREngine/MD Series** tab. Set up the **Color/Palette** and the **Screen Update** sections.

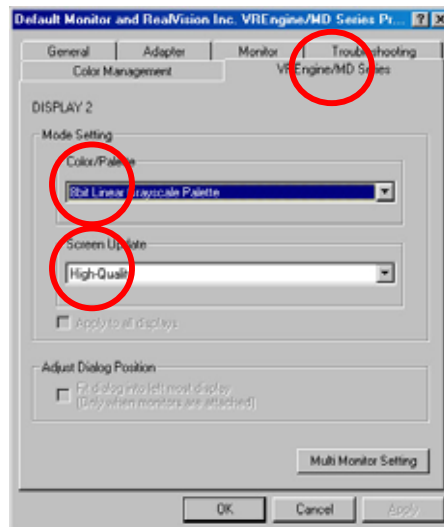
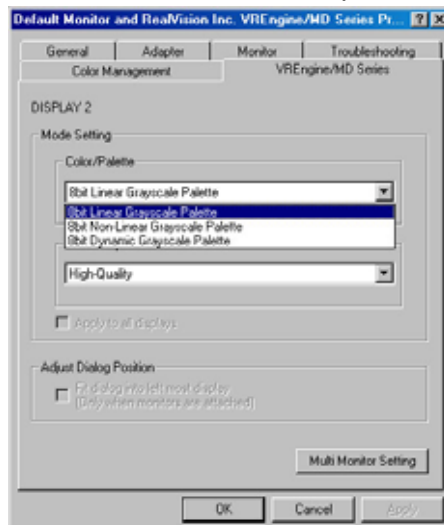
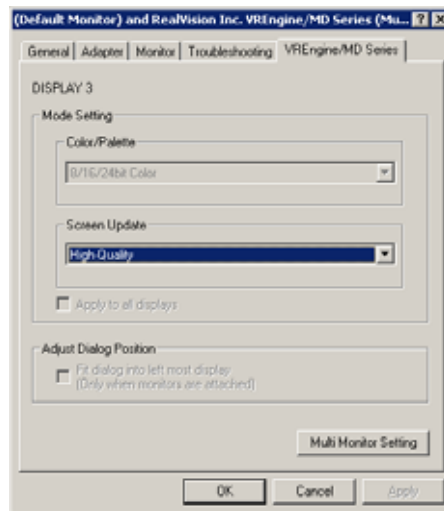


Figure 4.6 Advanced Setting - 2

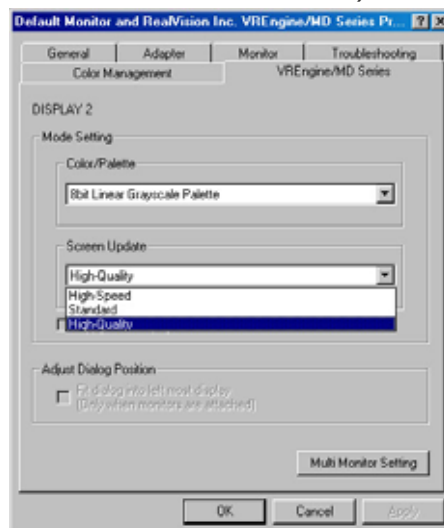
See the following explanations for more information on the **VREngine/MD Series** tab settings.

◆ **Color/Palette** (For more information, see 5.2.1.)

Figure 4.7 **Color/Palette** setting for a monochrome display

Figure 4.8 **Color/Palette** setting for a color display

◆ **Screen Update** (For more information, see 5.2.2.)

Figure 4.9 **Screen Update** setting

◆ **“Apply to all displays”**

If you are using multiple displays that are all the same model, “Apply to All Displays” should be active. Check this to apply the same settings to all displays at a time.

Note:

- After clicking “Apply,” a message appears and asks you whether or not to restart your computer. Click “Yes,” and your computer will be restarted.
- “Adjust Dialog Position” should not be active.

◆ **“Multi Monitor Setting” Button:** Click the button to configure multi-display setup. For more information, see 5.3.

4.2. Advanced Settings

4.2.1. Color/Palette

■ Color Modes for Color Displays

- “256 Colors”: 8 bit color
- “High Color”: 16 bit color
- “True Color”: 24 bit Color

■ Color Modes for Monochrome Displays

- “8 bit linear grayscale palette mode”: 256 fixed palette grayscale from 0 to 255
- “8 bit non-linear grayscale palette mode”:
256 fixed palette grayscale. The first and last 10 shades are for the system pallet and the remaining 236 shades are aligned in liner order.
- “8 bit variable grayscale palette mode”:
An application program selects variable 256 shades of gray.
- “24 bit color conversion grayscale palette”:
LV52P3/LV32P3 converts 24bit RGB-color into 10bit grayscale. The operating system will not shut down during processing.

4.2.2. Screen Update

The Screen Update section contains three screen refresh rates as follows.

- **High-Speed**: Fastest rate among three choices. If the staircase-patterned afterimage occurs, select another mode.
- **Standard**: Regular rate: slower than high-speed but faster than high-quality.
- **High-Quality**: Smoothest (slowest) without afterimage

Note: As for displays whose panels turn counter clockwise (CCW) when switching from landscape to portrait orientation, the **Screen Update** section is locked and Standard mode will be applied automatically.

4.3. Multi Monitor Setting

Select **Control Panel>VREngine/MD Series** from the **Start** menu. The following figure is an example of the **Control Panel** in Windows 2000.

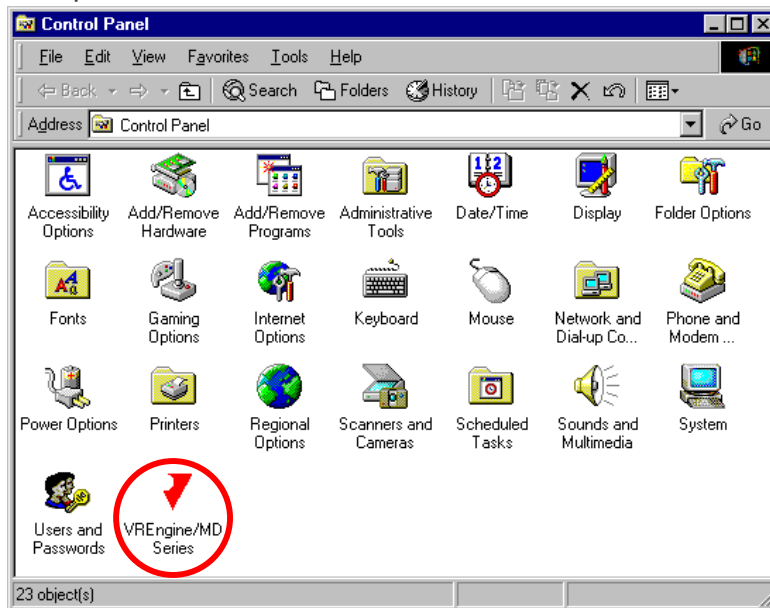


Figure 4.10 Control Panel

The following dialog box appears. Select the **Multi Monitor Setting** tab.



Figure 4.11 Multi Monitor Setting tab

Note:

- In this example, two displays are connected to the card and they are in “All-Independent” mode.
- Displays in this dialog box are named alphabetically, instead of numerically as in the Display Properties dialog box.

Click a display icon, and the display's information appears in the **Monitor Information** section. The icon with the black letter indicates it is selected.

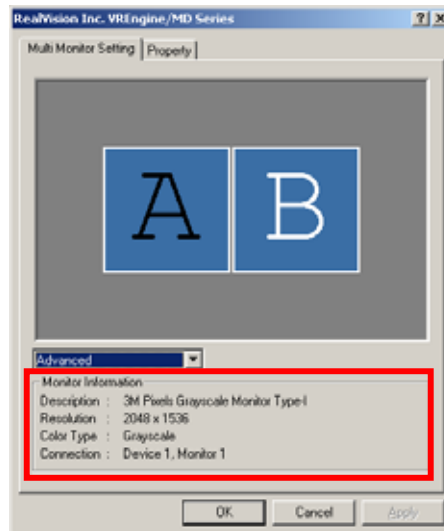


Figure 4.12 Monitor Information

The **Monitor Information** section contains:

- **Description:** Display model name
- **Resolution:** Display resolution
- **Color Type:** Grayscale/Color
- **Connection:** Card ID, Display ID

LV52P3 and LV32P3 are equipped with a new function that combines multiple displays into one widescreen desktop. Follow the instructions below.

- 1) Right-click on any display connected to this card, and a pop-up menu for the connection methods appears.
- 2) Select a connection method (see the following explanations for more information).
- 3) Another pop-up menu appears. Select an original display to which the display you have selected in step 1 will be connected.
- 4) The two displays are now combined into one virtual widescreen desktop.

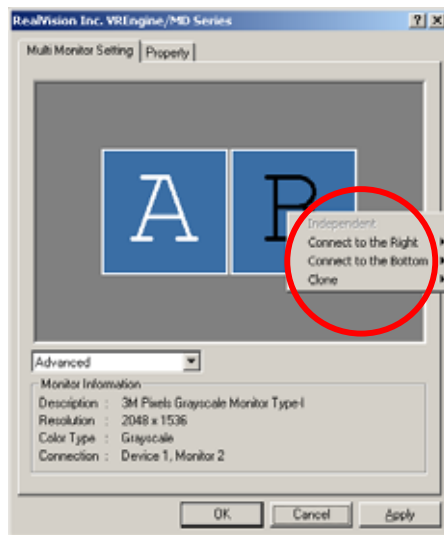


Figure 4.13 Pop-up menu for connection methods

A dotted line between displays A and B indicates that they are now connected.



Figure 4.14 combined two display

◆ Connect to the Right

Select this when displays are arranged horizontally. The selected display shows the left half of an image.

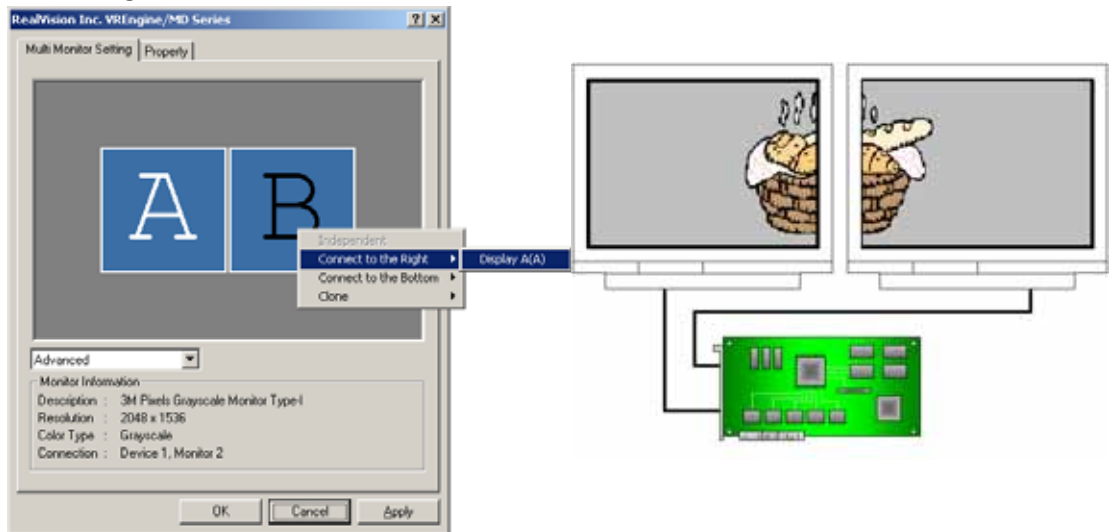


Figure 4.15 Connect to the Right

◆ Connect to the Bottom

Select this when displays are arranged vertically. The selected display shows the bottom half of an image.

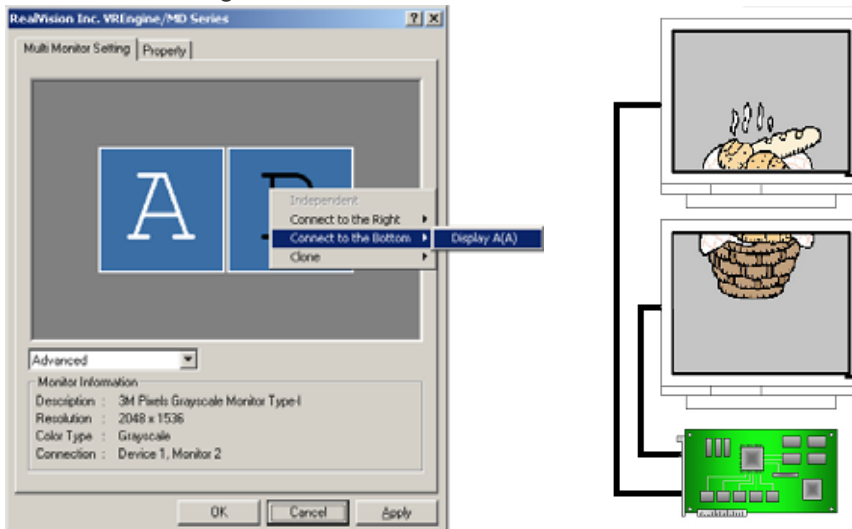


Figure 4.16 Connect to the Bottom

◆ Clone

Select this for both displays to show the exact same image.

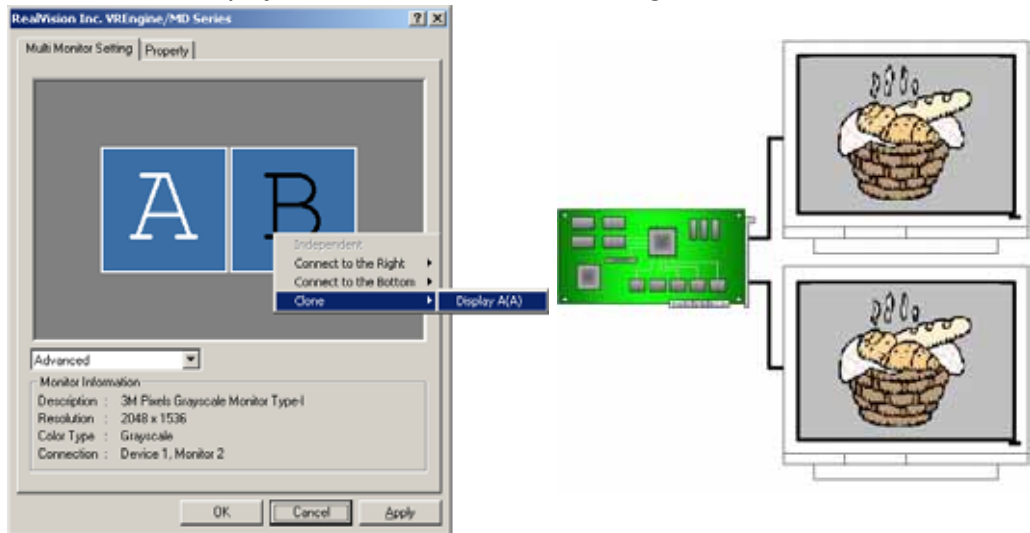


Figure 4.17 Clone

When “**Clone**” is selected, a dropdown menu appears on the left side in the middle. It contains “Original Display” and “Clone Display 1” to show just one display on the **Multi Monitor Setting** tab as in figures below.

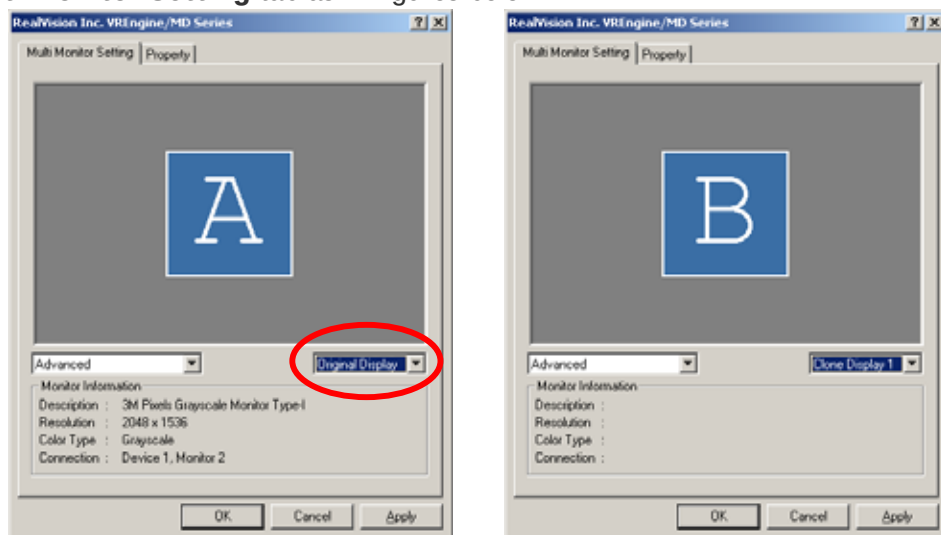


Figure 4.18 Clone mode

◆ Independent

Select this to use multiple displays independently. When this choice is not active, it indicates that it is already in independent mode or it is not in the multi-display environment.

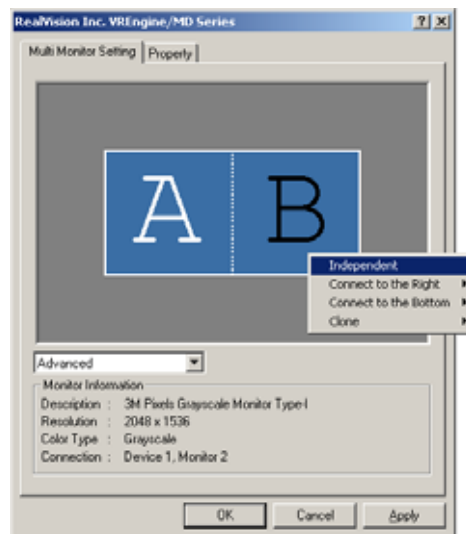


Figure 4.19 Independent

Note: To apply the settings, click “OK” and “Apply.” The changes will not be reflected until the computer is restarted. After clicking “Apply,” a message appears and asks you whether or not to restart your computer. Click “Yes.”

Instead of configuring each display separately, you can set them up at once using the dropdown menu located around the middle of the screen.

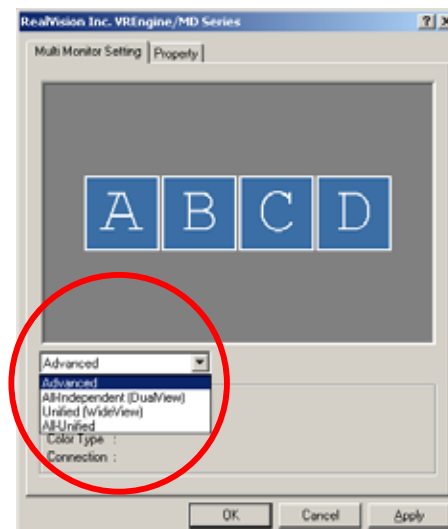


Figure 4.20 Multi Monitor Settings

◆ All-Independent (DualView)

Select this to set all displays in independent mode.

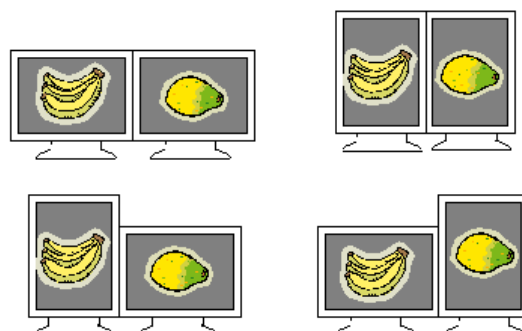


Figure 4.21 All-Independent

◆ Unified (WideView)

Select this to set the two displays connected to the same card in stretched mode.

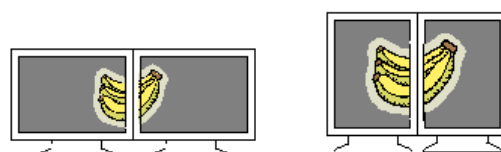


Figure 4.22 Attachment in the Device

◆ All-Unified

Select this to combine all displays connected to LV52P3/LV32P3's into one widescreen desktop. This is not available when there is only one LV52P3/LV32P3 installed.

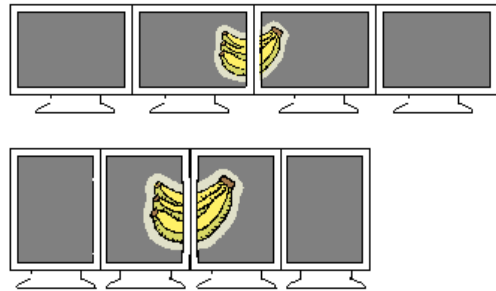


Figure 4.23 All-Unified

When in All-Independent mode ...

When multiple displays are connected to a computer and set in All-Independent mode, one LV52P3/LV32P3 is supposed to have two displays connected. Also keep the followings in mind.

- 1) Displays connected to the same card have to have the same **Color Type** and the **Resolution** settings and each display has to be set up separately.
- 2) To check display IDs and the physical arrangement of the two independent displays on the same card, click "Identity" on the **Settings** tab in the Display Properties dialog box.
- 3) Windows NT does not support multi-display settings.
- 4) Depending on viewing software, the grayscale modes you can use may be limited.

About other settings

As for the settings on the Power Options Properties dialog box, this card supports only "Turn Off Display." Settings such as "System Stand By" and "Hibernate" are not supported.

4.4. Adaptor and Driver Information

1. Select **Control Panel>VREngine/MD Series** from the **Start** menu. The following figure is an example of the **Control Panel** in Windows 2000.

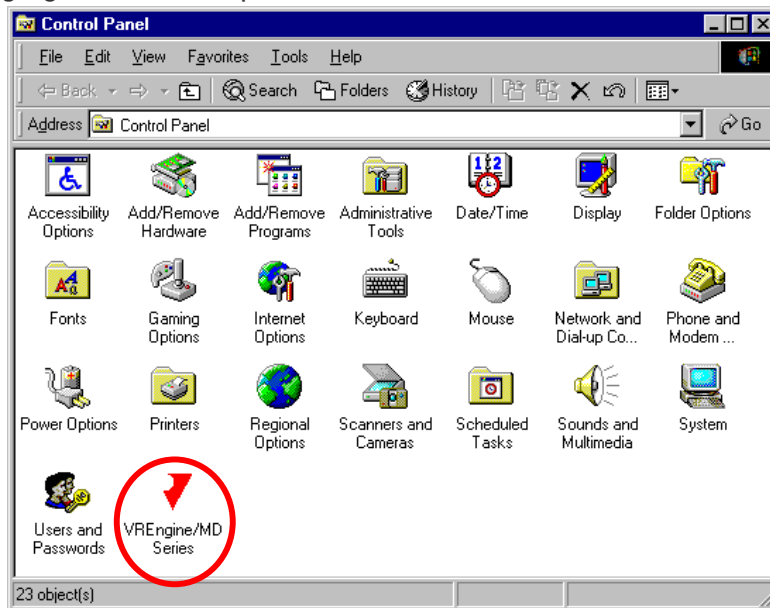


Figure 4.24 Control Panel

2. The following dialog box appears. Select the **Property** tab.

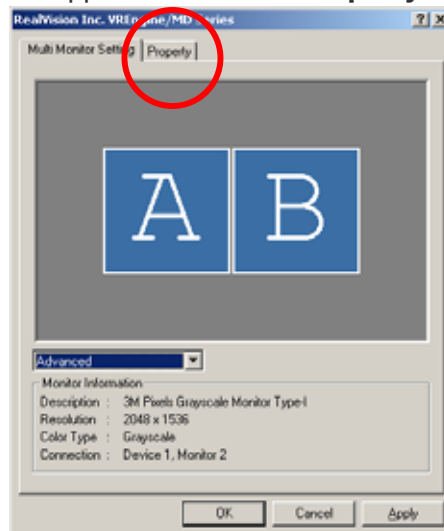


Figure 4.25 Property tab

3. The following dialog box appears, which contains the following information.
- **Display Adapter Information:** product name, Bios, location, and etc.
 - **Driver Information:** A list of drivers and their versions

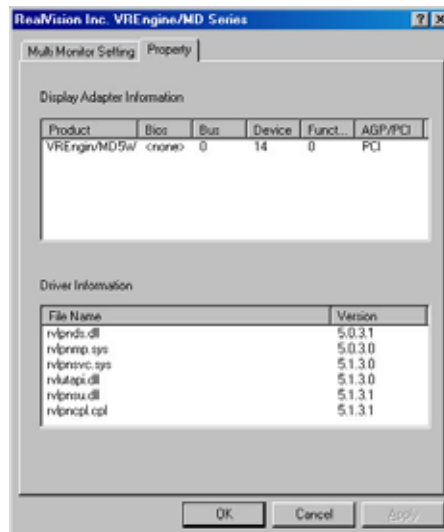


Figure 4.26 Detailed Information

4.5. Reconfiguring, Updating, and Uninstalling

Insert Driver & Installer CD-ROM, and the InstallShield Wizard starts automatically.

Note: If the wizard does not start automatically, double-click **Setup.exe** from driver & installer CD-ROM.

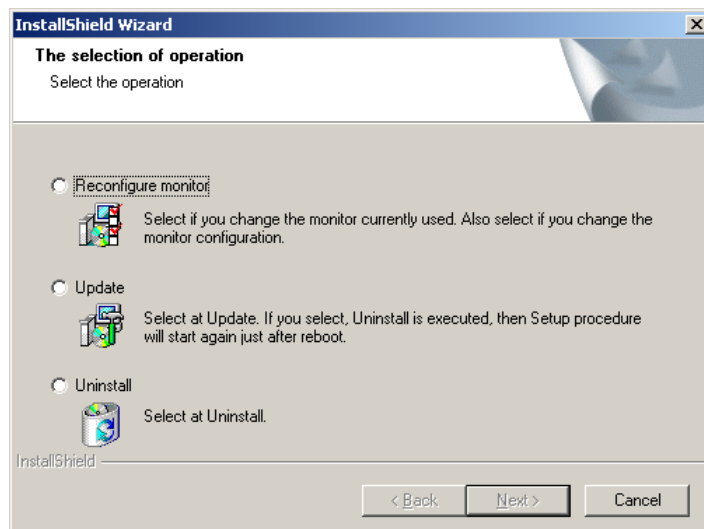


Figure 4.27 Select operation

- ◆ **Reconfigure monitor:** Add/remove a display
- ◆ **Update:** Update driver software or add/remove an LV52P3/LV32P3. The wizard uninstalls the driver software first and then updates it. For more information on software installation, see "**Installing Driver Software.**"
- ◆ **Uninstall:** Uninstall driver software. For more information on software uninstallation, see "**Uninstalling Driver Software.**"

Note: If you select "**Reconfigure monitor**" and then "**Update**," all previous settings including the Multi Display Setting will be reset to default.

5. Uninstalling Driver Software

This section describes how to uninstall driver software.

1. Select **Control Panel > Add/Remove Program** from the **Start** menu. The following figure is an example of the **Control Panel** in Windows 2000.

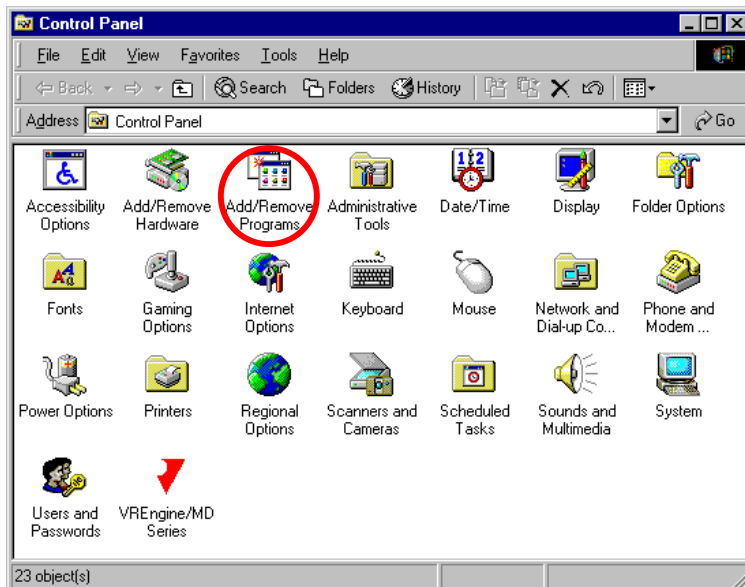


Figure. 5.1 Control Panel

2. Select **VREngine MD Series Display Driver** in the **Currently installed programs** section and click **"Change/Remove."**

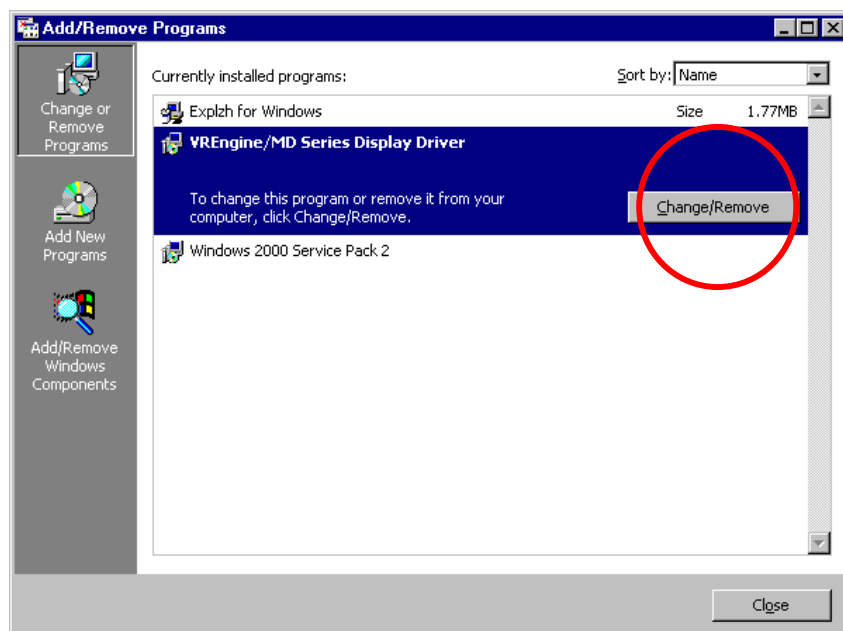


Figure. 5.2 Add/Remove Program

- When the following message appears, click **“Yes”** to start uninstallation.

Note: Prior to uninstallation, close all applications.

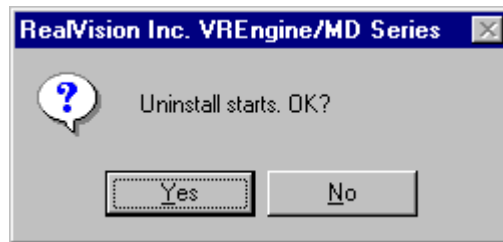


Figure. 5.3 Confirm uninstallation - 1



Figure. 5.4 Confirm uninstallation - 2

- Click **“Yes”** to restart your system. Uninstallation will be completed after restarting the computer.

6. Technical Specifications

6.1. LV32P3

Operating Conditions	Host System	DOS/V compatibles
	Operating Systems	Windows 2000 Professional Windows XP
	Host Processor	intel IA32, AMD, etc.
	Operating Frequency	>500MHz
	Host Bus Spec	PCI 32-bit / 5V, 3.3V (PCI Version2.2 compliant)
	Host Bus Frequency	66MHz
	Main Memory Size	>256M bytes
	Operating Voltage	5V $\pm$ 0.25V
	Power Consumption	16.8W (max.)
Mechanical Spec	Card Size (Dimensions)	174.5 (W) x 106.7 (H) mm or 7.1 (W) x 4.2 (H) inch
	Weight	160g / 0.34lbs
	Number of Occupied Slots	PCI bus slot x1
	Number of cards	PCI card x1
Display Resolution	Single-Display	2048 x 1536 pixel (Landscape) 1536 x 2048 pixel (Portrait)
	Multi-Display	4096 x 1536 pixel (Landscape) 3072 x 2048 pixel (Portrait)
Connectable Display		3M digital LCD display
Number of Connectable Displays		Maximum of 2 displays
Display Mode ^{Note 1}	Single-Display	Landscape Portrait
	Multi-Display	Landscape + Landscape Portrait + Portrait
VGA display function ^{Note 2}	Available	VGA standard compliant
Screen Rotation	Counter Clockwise	From portrait to landscape
	Clockwise	From landscape to portrait
Color Depths		8 bit/pixel grayscale 10 bit/pixel grayscale 8, 240bit/pixel color
Display Memory Size		128M bytes SDRAM
Video Output Std. ^{Note 3}	DVI (Digital Visual Interface)	DVI-D
Video Output Spec.	Dot Clock	130.0 MHz
	H-Sync	96.7 KHz
	V-Sync	60 Hz
	Refresh Rate	60 Hz
Safety Regulations		UL/cUL, FCC, CE
Operating Temperature		10 – 35°C / 50 – 95F
Environmental Conditions	Temp. & Humidity	-20 – 75°C / -4 – 167F 5 - 100% (None condensing)
	Altitude	Lower than 11,000m / 36,000ft

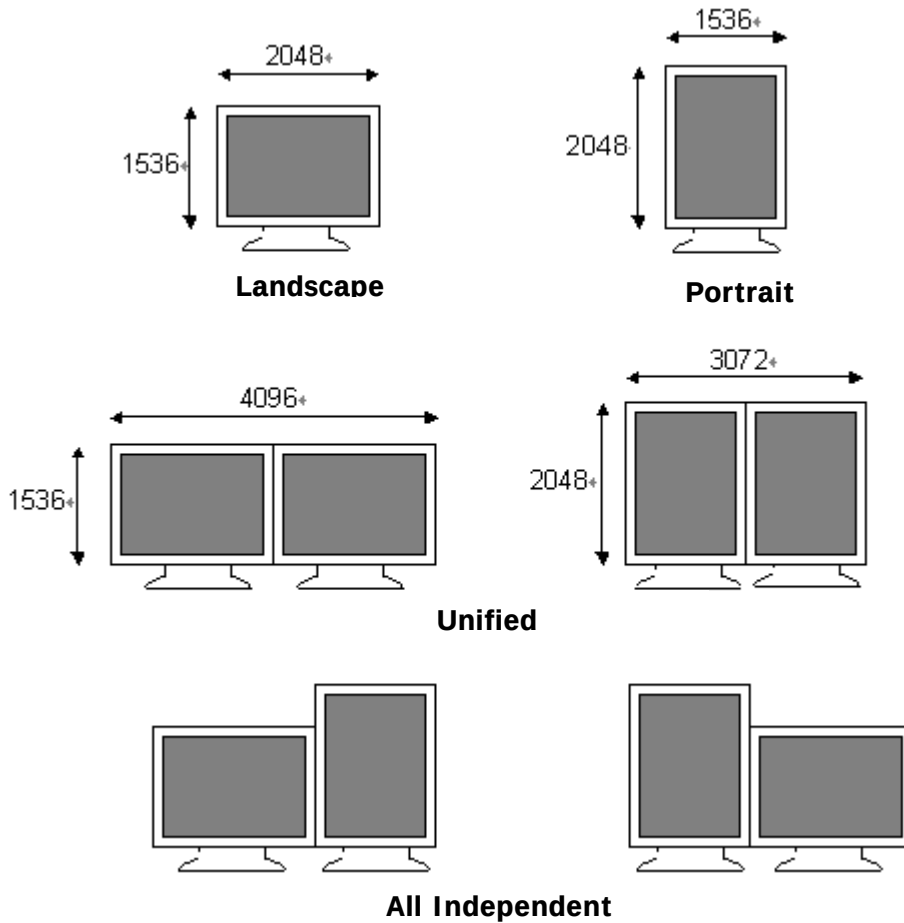
Note 1: Supported display modes

Figure 6.1 VREngine/SMD3-PCI Display Mode Settings

Note 2: With VGA mode, resolution of 640 x 480 can be enlarged to fit into 1536 x 2048. It also supports portrait orientation.

6.2. LV52P3

Operating Conditions	Host System	DOS/V compatibles
	Operating Systems	Windows 2000 Professional Windows XP
	Host Processor	intel IA32, AMD, etc.
	Operating Frequency	>500MHz
	Host Bus Spec	PCI 32-bit / 5V, 3.3V (PCI Version2.2 compliant)
	Host Bus Frequency	66 MHz
	Main Memory Size	>256M bytes
	Operating Voltage	5V $\pm 0.25V$
	Power Consumption	16.8W (max)
Mechanical Spec.	Card Size (Dimensions)	174.5 (W) x 106.7 (H) mm or 7.1 (W) x 4.2 (H) inch
	Weight	160g / 0.34lbs
	Number of Occupied Slot	PCI bus slot x1
	Number of Card	PCI card x1
Display Resolution	Single-display	2560 x 2048 pixel (Landscape) 2048 x 2560 pixel (Portrait)
	Multi-display	5120 x 2048 pixel (Landscape) 4096 x 2560 pixel (Portrait)
Connectable Display		5M-digital LCD display
Number of connectable displays		Max 2 displays
Display Mode ^{Note 1}	Single-display	Landscape Portrait
	Multi-display	Landscape + Landscape Portrait + Portrait
VGA display function ^{Note 2}	Available	VGA standard compliant
Rotate-direction of Screen	Counter Clockwise	From portrait to landscape
	Clockwise	From landscape to portrait
Color Depths		8-bit/pixel grayscale 10-bit/pixel grayscale 8, 24bit/pixel color
Display memory size		128Mbytes SDRAM
Video Output Std. ^{Note 3}	DVI (Digital Visual Interface)	DVI-D
Video Output Spec.	Dot Clock	148 MHz
	H-Sync	103.9 KHz
	V-Sync	50 Hz or 60 Hz
	Refresh Rate	50 Hz or 60 Hz
Certification		UL/cUL, FCC, CE
Operating Temperature		10 – 35°C / 50 – 95F
Environmental Conditions	Temp. & Humidity	-20 – 75°C / -4 – 167F 5 - 100% (None condensing)
	Altitude	Lower than 11,000m / 36,000ft

Note 1: Supported display modes

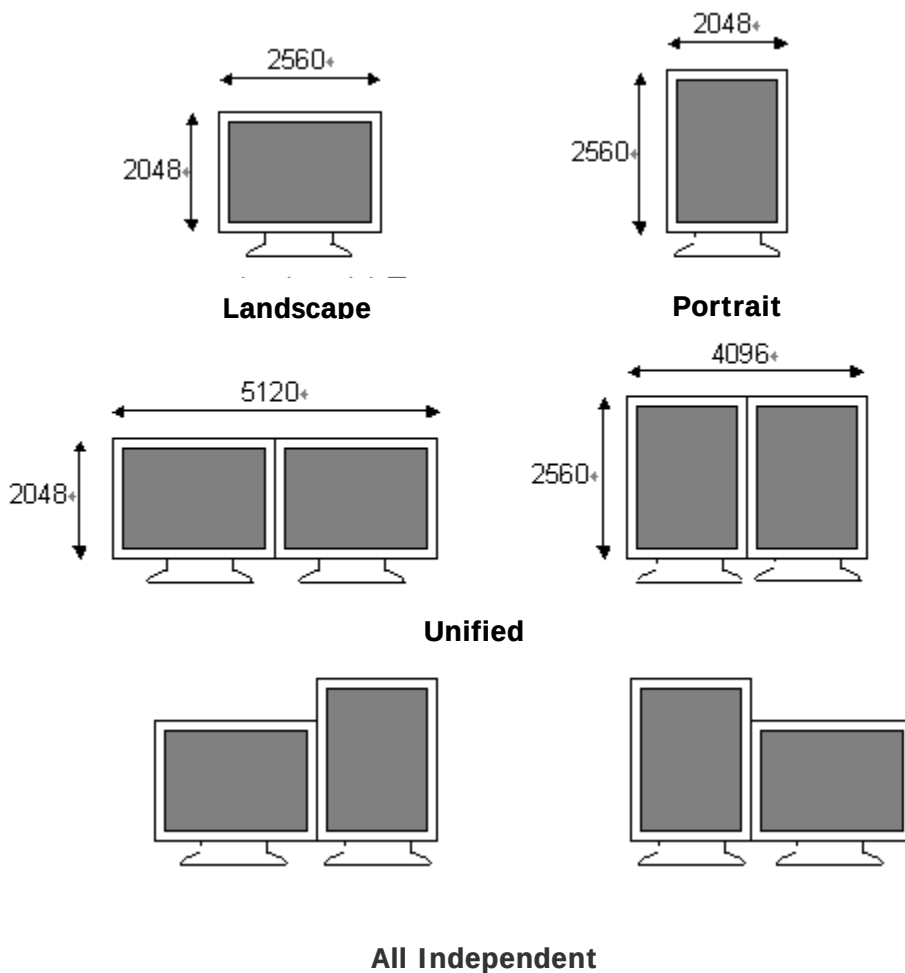


Figure 6.2 VREngine/SMD5-PCI Display Mode Settings

Note 2: With VGA mode, resolution of 640 x 480 can be enlarged to fit into 1536 x 2048. It also supports portrait orientation.

6.3. Display Interface

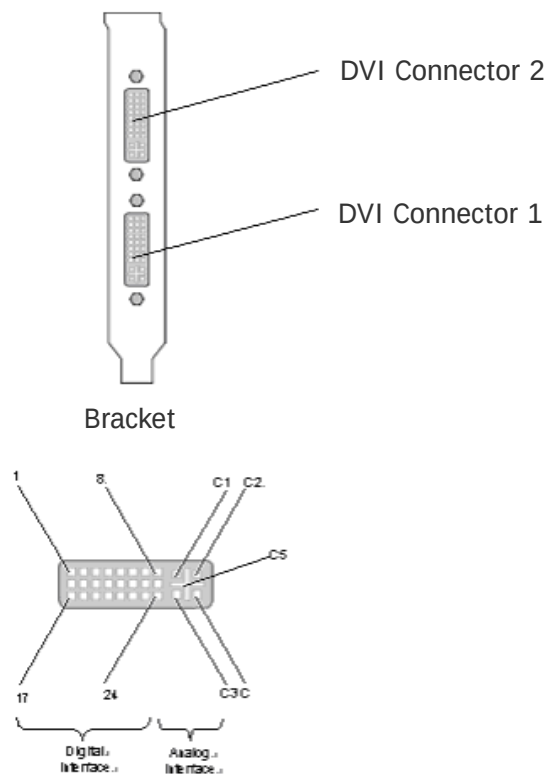


Figure 6.3 Display Interface

PIN	Signal	PIN	Signal	PIN	Signal
1	TMDS Data 2-	9	TMDS Data 1-	17	TMDS Data 0-
2	TMDS Data 2+	10	TMDS Data 1+	18	TMDS Data 0+
3	TMDS Data 2/4 Shield	11	TMDS Data 1/3 Shield	19	TMDS Data 0/5 Shield
4	TMDS Data 4-	12	TMDS Data 3-	20	TMDS Data 5-
5	TMDS Data 4+	13	TMDS Data 3+	21	TMDS Data 5+
6	DDC Clock (Output for DVI connector 1,2)	14	+5V Power	22	TMDS Clock Shield
7	DDC Data (Output for DVI connector 1, 2)	15	Ground (return for +5V, Hsync and Vsync)	23	TMDS Clock+
8	N.C.	16	Display sense	24	TMDS Clock-
C1	N.C.	C2	N.C.	C3	N.C.
C4	N.C.	C5	N.C.		

7. Disposing of the Product

The related laws and/or ordinance by local government may apply. Consult your dealer.

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